PB-214 923

A NEW MULTIPLE SIEVE DESIGN FOR SCREENING BOTTOM SAMPLES

David N. Peters, et al

Robert S. Kerr Water Research Center
Ada, Oklahoma

July 1969

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

194

PB 214 923

A NEW MULTIPLE SIEVE DESIGN FOR SCREENING BOTTOM SAMPLES

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

U. S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
ROBERT S. KERR WATER RESEARCH CENTER
ADA, OKLAHOMA

JULY 1969

1

A NEW MULTIPLE SIEVE DESIGN FOR SCREENING BOTTOM SAMPLES

by

David N. Peters[1/] and Tommy N. Redman[2/]

1/ Aquatic Biologist, Chemistry and Biology Section, Technical Services Program, Robert S. Kerr Water Research Center, Ada, Oklahoma

2/ Engineering Technician, Research Resources Program, Robert S. Kerr Water Research Center, Ada, Oklahoma

Details of illustrations in this document may be better studied on microfiche

Sampling devices used by aquatic biologists to collect macroinvertebrates in a lake or stream will vary with the kind of substrate to be sampled. Even when properly used, these sampling devices collect large amounts of debris which may prevent the biologist from efficiently concentrating or separating macroinvertebrates in the sample.

A combined washing-screening process, conducted immediately following collection, is the best procedure for concentrating and separating organisms from the sample. This procedure is usually accomplished with a No. 30 U. S. Standard Sieve* (openings of approximately 0.6 millimeter) that retains macroinvertebrates.

Very coarse sieves, when used with a No. 30, can effectively screen large debris that is collected in a bottom sample. The redwood sieve on the left in Figure 1 is a No. 30 U. S. Standard Sieve. The mesh sizes of the other redwood sieves shown are No. 10, 1/4", and 1/2". When latched together (Figure 2) these redwood sieves can be used to efficiently conduct the washing-screening process. During this process, large debris collected in the first two sieves can be immediately scanned and individual organisms picked from each sieve. The remaining portion of the sample may also be hand-picked at the sampling site or placed in a small container and transported to the laboratory.

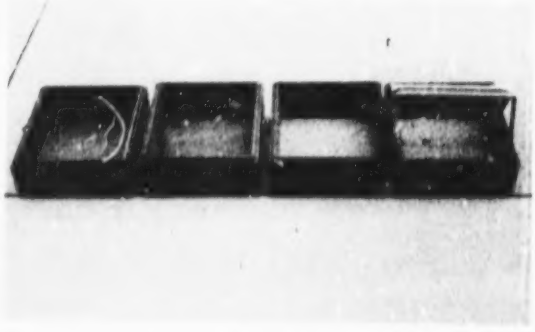


Figure 1. Four 10" x 13" redwood sieves

* Prescribed by *Standard Methods for the Examination of Water and Wastewater*, 12th edition, 1965

The redwood sieves have many practical features. They may be used as a wash-bucket. A bottom sample, when placed in the sieves, may be washed in a vigorous manner without the loss of organisms.

The redwood forms a water repellent, lightweight, and durable frame. The sieves can withstand rough treatment in the field and float (Figure 3) if temporarily lost from boat or shore. The inside measurements are 10" x 13" x 4". They are capable of handling large dredge samples but are not cumbersome for use in laboratory analyses. The sieves are interchangeable and when latched together form a compact, lightweight unit that weighs 14.5 pounds. As a unit, they can be conveniently transported from labora- to field.

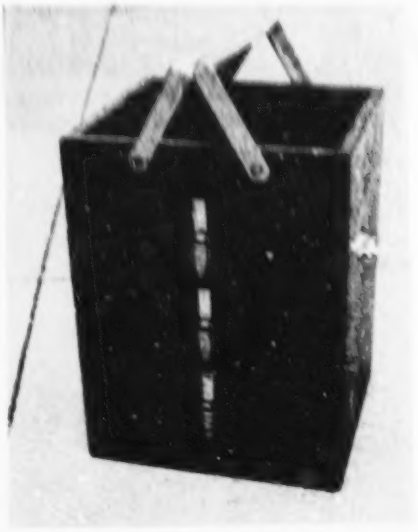


Figure 2. Redwood sieves as a unit

Except for the No. 10 and No. 30 wire gauze, all the materials were purchased at a local hardware store or lumberyard. An experienced craftsman can construct four of these sieves in approximately eight hours.

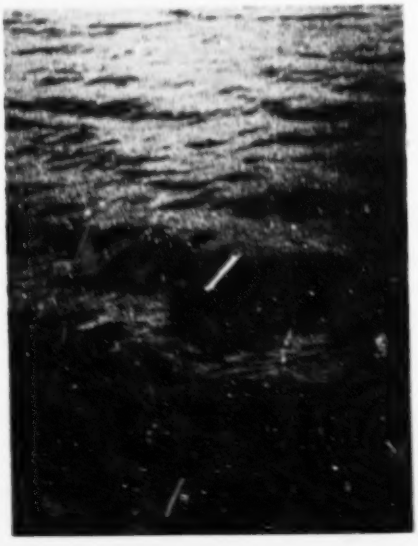


Figure 3. Redwood sieves floating in water

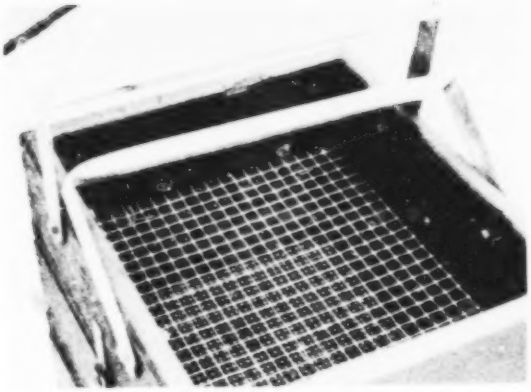


Figure 4. Top view of redwood sieves

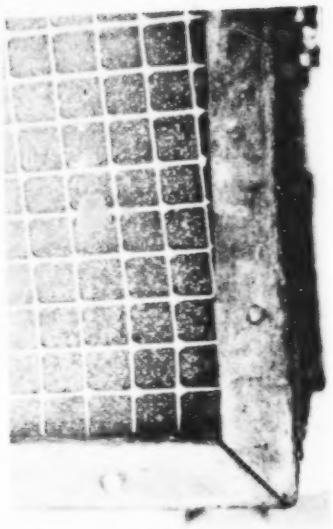


Figure 5. Bottom view of No. 30 redwood sieve

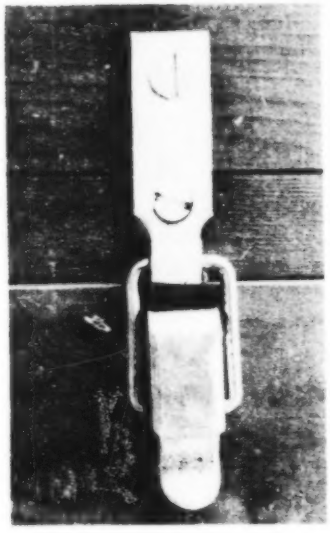


Figure 6. Latching mechanism composed of 2" brass draw catch and metal hook. Hook is fashioned from a 2" corner brace

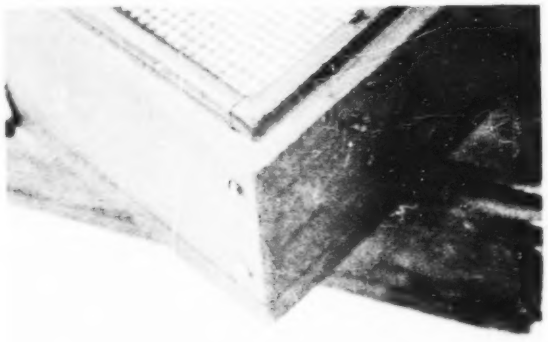
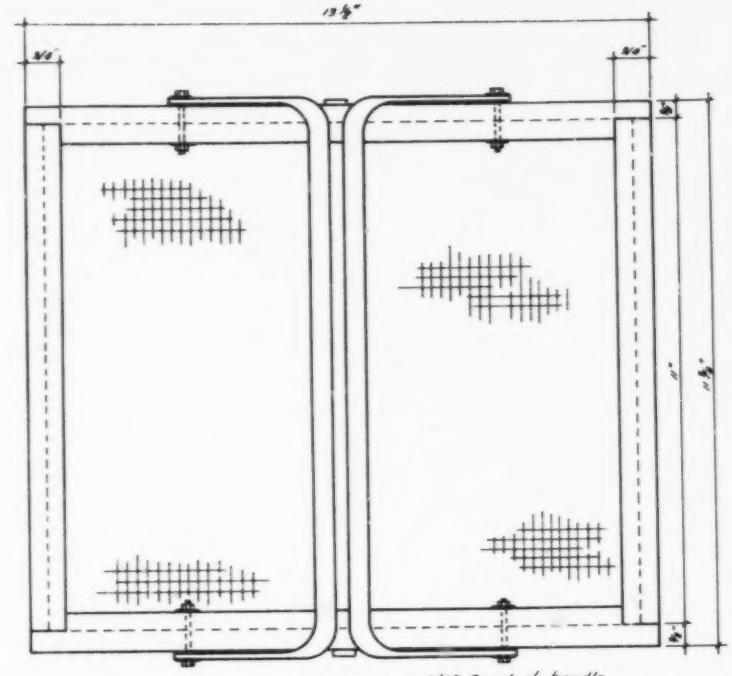
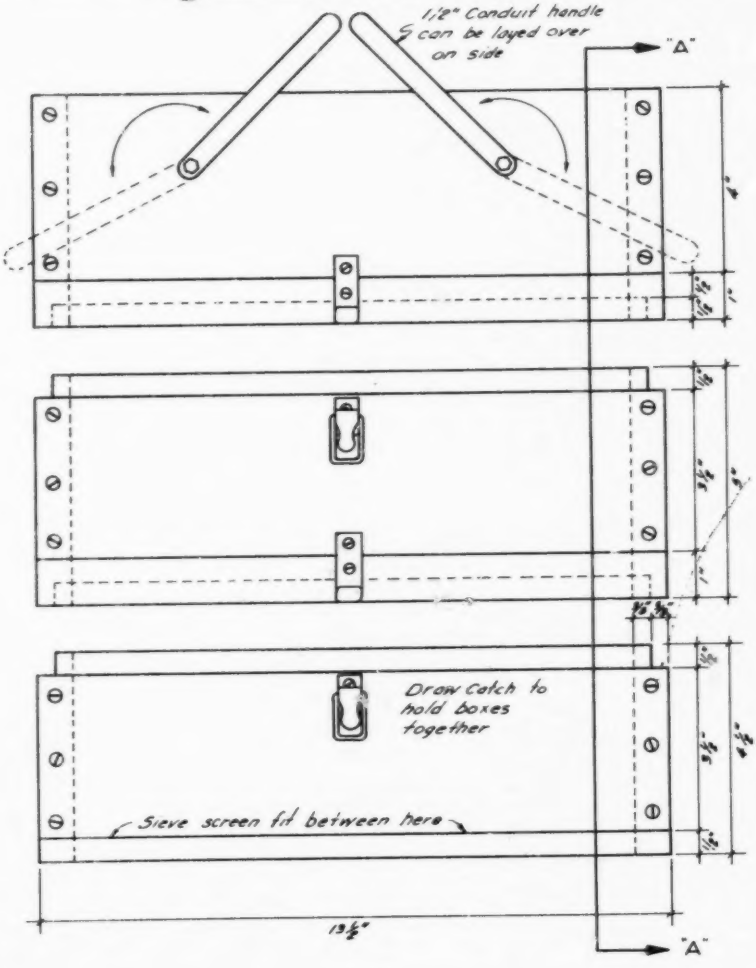


Figure 7. Joint design of redwood frame

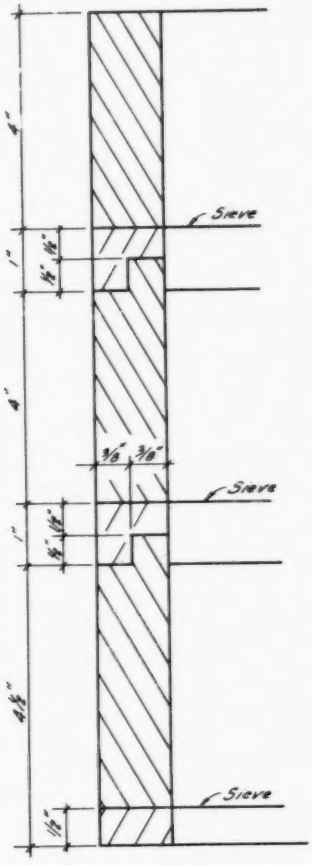
Figure 8. Side view of latching mechanism. Note: piece of rubber tubing placed over hook to provide for firm latch



Redwood Sieves
No Scale



DETAIL OF REDWOOD SIEVES
Scale: 1/2" = 1"



Section "AA"
(Boxes Attached)
No Scale

List of Materials

Item	Amount*
1" x 6" choice redwood	24 feet
2" corner braces	6
aluminum conduit (1/2" diameter)	4 feet
2" brass draw catch	6
1/2" galvanized hardware cloth	2 12" x 14" pieces
1/4" galvanized hardware cloth	1 12" x 14" piece
No. 10 U. S. Standard sieve	1 12" x 14" piece
No. 30 U. S. Standard sieve	1 12" x 14" piece
brass round-headed screws	3 dozen
flatheaded screws	1 dozen
1-1/4" bolt with nut	4
lock washers	4
finish nails	
epoxy glue	
staples or screen tacks	

* Amount needed for four redwood sieves